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Goddard Procedural Requirements (GPR)

DIRECTIVE NO.	GPR 8719.1A	**APPROVED BY Signature:**	***Original signed by Arthur F. Obenschain for***
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EXPIRATION DATE:	May 8, 2014	**TITLE:**	Director

COMPLIANCE IS MANDATORY

Responsible Office: 540/Mechanical Systems Division

Title: Certification and Recertification of Lifting Devices and Equipment and Its Operators

Goddard Interim Directive (GID) 8719.1, Certification and Recertification of Lifting Devices and Equipment and Its Operators, assigns additional requirements to this GPR.

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PREFACE

P.1 PURPOSE

This directive establishes the requirements for the GSFC Recertification Program (RECERT) to provide Center organizations with inspection, certification, and recertification of lifting devices and equipment (LDE). LDE Operator for cranes, mobile aerial platforms (MAP), and powered industrial trucks (PIT), and Critical Lift Coordinator (CLC) training and certification requirements are also established. This Center program improves safety, and minimizes or prevents potential personnel injury or fatality, and damage or loss of hardware and facilities.

This directive is not a substitute for applicable Occupational Safety and Health Administration (OSHA) and national consensus codes and standards (NCS) requirements. OSHA and NCS requirements apply to all GSFC LD and LDE Operators.

P.2 APPLICABILITY

a. This directive is applicable to all LDE at Greenbelt, Wallops Flight Facility (WFF), and other areas under GSFC cognizance, regardless of ownership, that are operated or used by NASA employees or GSFC support services contractors, to the extent required in their respective contracts, unless specifically excluded by this directive or by the RECERT Manager.

b. When invoked as a contractual requirement by a project, this directive is applicable to the extent specified in the contract for off-site contractor installations supporting GSFC activities.

c. Lifting operations under privatization clauses shall be subjected to the provisions of this directive to the extent provided by the contract, and the requirements shall be clearly specified therein.

d. The responsible Contracting Officer and the Project Manager shall apply requirements of this directive to any contractor, tenant, or customer if non-NASA lifting operations place NASA personnel, facilities, or equipment at risk through incorporation into their respective contracts.

e. This directive does not apply to contractor lifting operations using contractor provided LDE which are exclusively associated with facility construction activities where these activities take place exclusively within an area to which access by the general population of NASA employees is excluded.

P.3 AUTHORITY

NASA-STD-8719.9, Standard for Lifting Devices and Equipment

P.4 REFERENCES

The references as listed within the NASA-STD 8719.9 are applicable.

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a. NPR 8715.3, NASA General Safety Program Requirements
b. GPR 1400.1, Waiver Processing
c. GPR 8621.1, Reporting of Mishaps and Close Calls
d. GPR 8834.1, Lifting Operations Requirements
e. ASME PALD, Safety Standard for Portable Automotive Lifting Devices
f. NASA-STD 8719.17, NASA Requirements for Ground-Based Pressure Vessels and Pressurized Systems (PV/S)
g. 540-WI-8719.1.3, Lifting Devices Daily Inspection Forms

P.5 CANCELLATION

GPR 8719.1, Certification and Recertification of Lifting Devices and Equipment.

P.6 SAFETY

Detailed safety requirements are contained in applicable test and inspection procedures.

P.7 TRAINING

Training requirements are specified in Section 3.

P.8 RECORDS

Record Title	Record Custodian	Retention
Test & Inspection Reports for: ▪ LDE	RECERT Manager at Greenbelt, Deputy RECERT Manager at WFF	Permanent – pending approval of record schedule. *NRRS 8/56.5A
Operator Certifications: ▪ LDE ▪ CLC	RECERT Manager at Greenbelt, Deputy RECERT Manager at WFF	*NRRS 3/33G Destroy 5 years after separation of employee or when no longer needed.
Completed Daily Checklists	Property Custodian	Permanent. NRRS 8/56.5D
RECERT documentation	RECERT Manager	*NRRS 3/33G
LDEC Meeting Minutes	RECERT Manager	Permanent. *NRRS 1/14B (1) (a) Retire to FRC when 2 years old. Transfer to NARA when 20 years old.

**NRRS – NASA Records Retention Schedules (NPR 1441.1)*

P.9 METRICS

The RECERT Manager shall document the percentage of scheduled test and inspections completed.

P10. DEFINITIONS

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Most of the terms used in this directive are defined in NASA-STD-8719.9. Those that are critical and or unique to this directive are listed below.

a. Certification/Recertification – Written documentation that a set of requirements has been, and continues to be, met. As used in this GPR, certification and recertification is: 1) a process performed by the RECERT Manager that leads to the initial, or continuation of, certification that LDE is safe to use within specific certification parameters, and includes, but is not limited to LDE compliance and documentation reviews, tests, inspections, nondestructive testing, and analyses; 2) a license issued and renewed by the RECERT Manager for operation of LDE; and 3) a memo or license issued to perform the duties of a CLC.

b. Critical Hardware – Hardware whose loss would have serious programmatic or institutional impact and that has been identified by the installation, directorate, or project as being critical.

c. Critical Lift – A lift where failure/loss of control could result in loss of life, loss of or damage to critical hardware or other items such as spacecraft, one-of-a-kind articles, or major facility components whose loss or damage would have serious programmatic or institutional impact. Operations involving the lifting of personnel with a crane, and lifts where personnel are required to work under a suspended load, shall be defined as critical lifts (see NASA-STD-8719.9). Operations with special personnel and equipment safety concerns beyond normal lifting hazards shall also be designated as critical.

d. Critical Lift Coordinator (CLC) – An individual who is assigned or demonstrates a need to direct critical lift activities due to specific project requirements and who has obtained the necessary training and is certified by the RECERT Manager. The CLC is an optional position, used only when a project desires to have its own lifting expert. The role of the CLC shall be specified in the Critical Lift Procedure.

e. Daily Checklist – An inspection and/or test that is performed on a daily basis only for those days while in use.

f. Division Office – For the purposes of this GPR, use of the term “Division Office” includes Project Offices and Program Offices.

g. Flight Hardware – Hardware designed and fabricated for ultimate use in a vehicle intended to fly.

h. Lifting Devices (LD) and Equipment (LE) collectively (LDE) – LDE comprises LD such as overhead and gantry cranes (including top running monorail, underhung, and jib), mobile cranes, derricks, hoists, winches, special hoist supported personnel lifting devices, mobile aerial platforms (MAP), powered industrial trucks (PIT), and jacks; and LE such as Hydra-sets, load measuring devices, hooks, slings and rigging used for lifting and support of flight hardware or personnel..

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i. LDE Operator Certification – The documented status of LDE operators (Crane Operator, MAP Operator, and PIT Operator) validating that they are trained and qualified in accordance with NASA-STD-8719.9 and certified by the RECERT Manager. For the purposes of the GSFC LDE RECERT Program, an individual certified as a Crane Operator is concurrently certified as a Rigger, and references to Crane Operators include Riggers. Jack Operators shall be designated and authorized by the equipment owning organization.

j. MPJ – For the purposes of this directive, the collective term "MPJ" refers to MAPs, PITs and Jacks as defined in NASA-STD-8719.9.

k. RECERT Documentation – Files that are maintained for LDE that may include, but are not limited to, manufacturer's/fabricator's documents, field test data, safety analyses, results of engineering analyses, repair history, facility descriptions, record of all safety variances, re-rating, and correspondence.

l. RECERT Procedure – RECERT generated or OEM-provided documentation that describes the specific steps needed to inspect, test or operate LDE.

m. RECERT Manager and Deputy RECERT Manager/WFF – Positions appointed by the Center Director to implement and enforce the Center's LDE and ground-based pressure vessels and pressurized systems (PVS) Program meeting NASA-STD-8719.9 and NASA-STD-8719.17 requirements, respectively. The RECERT Manager and Deputy RECERT Manager/WFF positions are a combination of the LDEM and PSM positions described in both NASA Technical Standards.

n. Rigger – An individual who selects and attaches LE to an item to be lifted. For the purposes of this directive, a Rigger is a certified Crane Operator.

o. Support Services Contractors – Contract personnel who are based on-site and participate in on-going daily operations at GSFC.

P11. ACRONYMS

ASNT	American Society for Nondestructive Testing
CG	Center of Gravity
CLC	Critical Lift Coordinator
FMD	Facilities Management Division
GSC	Goddard Safety Council
GSFC	Goddard Space Flight Center
IMHE	Institutional Material Handling Equipment
LD	Lifting Device
LDE	Lifting Devices and Equipment

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LDEC	LDE Committee
LDEM	LDE Manager
LE	Lifting Equipment
LOTO	Lockout Tagout
MAP	Mobile Aerial Platform
MPJ	Mobile Aerial Platform, Powered Industrial Truck, and Jack collectively (see P10.i)
NDT	Nondestructive Testing
NRRS	NASA Records Retention Schedules
OEM	Original Equipment Manufacturer
OSHA	Occupational Safety and Health Administration
PIT	Powered Industrial Truck
PSM	Pressure Systems Manager
PVS	Pressure Vessels and Pressurized Systems
RECERT	Goddard Recertification Program
WFF	Wallops Flight Facility

PROCEDURES

In this document, a requirement is identified by "shall," a good practice by "should," permission by "may" or "can," expectation by "will," and descriptive material by "is."

1. Responsibilities

1.1 Center Director appoints the RECERT Manager and Deputy RECERT Manager/WFF for LDE and PVS.

1.2 RECERT Manager shall

a. Maintain overall responsibility for the management, implementation, and enforcement of the Center's LDE Recertification Program;
b. Provide technical direction to the Deputy RECERT Manager and the RECERT Support Contractor;
c. Serve as the GSFC interface with NASA Headquarters and other NASA Centers on matters pertaining to LDE.
d. Serve as the GSFC representative on the NASA LDE committee;
e. Chair the Center LDE Committee;
f. Serve as the Certifying Authority for the certification and recertification of LDE to which this directive is applicable;
g. Serve as the final authority on interpretation of, and compliance with, this directive and its references;
h. Establish and maintain a system for periodic inspection of LDE including review of logbooks, daily inspection forms, identification of deficiencies, and completion of corrective actions;
i. Furnish daily inspection forms for LDE operator's use. Note that daily inspection forms are limited to cranes, MAPs, and PITs. The daily inspection forms are listed in 540-WI-8719.1.3;

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j. Ensure that certification and/or recertification tests and inspections are performed by personnel properly qualified and certified in accordance with applicable codes and standards;
k. Provide expert advice on LD design, specification, and modification;
l. Approve the re-rating of LDs;
m. Review and concur/nonconcur with waiver requests per GPR 1400.1;
n. Review and approve specifications prior to procurement of LDs;
o. Establish and maintain a RECERT configuration management system for LDE;
p. Review, approve, and monitor the training courses for qualifying LDE Operators, and define their training and retraining requirements;
q. Certify and recertify LDE Operators;
r. Perform compliance spot checks of LDE Operators to ensure that the requirements of this GPR are being followed;
s. Provide Division Offices with an inventory of Division LDs for review and update as required; and
t. Coordinate with affected Center safety offices on issues of mutual interest.

1.3 Deputy RECERT Manager/WFF. The Deputy RECERT Manager shall serve as the RECERT Manager's alternate and represent the RECERT Manager at WFF for day-to-day operations by performing duties in Section 1.2.

1.4 Division Offices shall

a. Ensure documented compliance to this directive;
b. Submit LDE specifications to the RECERT Manager for review and approval prior to purchase;
c. Ensure that LDE are certified prior to use;
d. Provide resources for training and ensure that LDE operators are certified;
e. Ensure that LDE for which the division is responsible is appropriately certified for critical or noncritical lifts, and provide the information to RECERT as required;
f. Determine the appropriate LD usage category, i.e., Active, Standby, or Idle; and classification, i.e., Critical or Noncritical, based on current and projected operational requirements;
g. Maintain a current inventory of Division LDE including slings, shackles, turnbuckles, D-rings, load measuring devices, and other LE;
h. Manage and control uncertified or expired LDE to preclude inadvertent use;
i. Request that RECERT perform certification of new or transferred LDE prior to their use;
j. Notify the RECERT Manager immediately of all LDE deficiencies and failures, and initiate the appropriate Incident/Mishap Report in accordance with GPR 8621.1;
k. Initiate repair for LDE deficiencies found during test and inspections;
l. Ensure that OEM-recommended maintenance is performed on LDE;
m. Submit requirements to the appropriate budget to bring Division LDE into compliance with this directive;
n. Review Division LDE inventory as requested by the RECERT Manager;
o. Maintain responsibility for day-to-day operations of LDE under their cognizance;
p. Coordinate outages for load testing and inspections of inventoried LDE with RECERT to minimize conflicts with ongoing operations; and

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q. Notify RECERT of any deficient LDE that is removed from service.

1.5 Safety and Environmental Division/Code 250 and Wallops Safety Office/Code 803 shall

a. Review RECERT operations for compliance with OSHA and NASA-STD-8719.9;
b. Monitor the institutional safety requirements of this directive; and
c. Provide medical expertise via the Medical Director to establish LDE operator physical examination criteria using applicable NASA and American National Standards Institute requirements.

1.6 Facilities Management Division (FMD)

FMD shall notify the RECERT Manager of any planned LDE acquisition, installation, upgrade, and/or removal as part of any facilities project. To ensure compliance and certifiability, all LDE designs and specifications shall be supplied to the RECERT Manager for review and approval prior to contract implementation.

1.7 Certified Crane Operators shall

a. Ensure that the load is properly and safely rigged;
b. Verify the GSFC RECERT certification status of the LDE is current before commencing lifting operations (using uncertified LDE is a violation of Center policy);
c. Perform crane daily inspections and tests in accordance with RECERT procedures;
d. Perform LE inspection before use;
e. Provide entry in the LD (including Hydra-set) log book for all inspections, tests, and operations; and
f. Perform LDE lock out procedures if any deficiencies are observed and immediately enter the deficiencies into the log book and notify RECERT..

1.8 Certified Critical Lift Coordinators

Certified CLCs may be responsible for directing and giving commands to the Crane Operator during a lifting operation if so designated in the Critical Lift Procedure. If the CLC is in charge of the lifting operation, they shall, in a pre-lift briefing, instruct personnel in the proper preparation, rigging, lifting, and final positioning of the load. Coordination for directing the lifting operation shall be delineated in the Critical Lift Procedure and re-emphasized in the pre-lift briefing. A CLC shall not perform rigging activities or hands-on operation of LDs.

1.9 Certified MAP and PIT Operators and Authorized Jack Operators shall

a. Verify the GSFC RECERT certification status of equipment is current before commencing operations (using uncertified LDE is a violation of Center policy);
b. Perform daily inspection in accordance with RECERT checklist before operation;
c. Provide entries in the equipment log book for all inspections, tests, and operations; and

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d. Lock out the equipment and place an out-of-service tag on the equipment if any deficiencies are observed and immediately enter the deficiencies into the log book and notify RECERT.

2. Equipment Requirements

2.1 Types and Traceability

2.1.1 Items Subject to RECERT. The following items are included in the RECERT Program and shall be subjected to formal certification and recertification. Other items may be included if deemed necessary by the RECERT Manager.

- Overhead and Gantry Cranes (Top Running Bridge, Single or Multiple Girder, Top Running Trolley Hoist, and Jib Cranes)
- Mobile Cranes
- Base Mounted Drum Hoists
- Monorails and Underhung Cranes and Hoists
- Manually Operated Level Hoists
- Special Hoist-Supported Personnel Lifting Devices
- Hydra-sets
- Crane Hooks
- Wire Rope Slings
- Alloy Steel Chain Slings
- Metal Mesh Slings
- Synthetic Slings
- Structural Slings
- Lifting assemblies
- Shackles, Turnbuckles, Swivel Joints, Connecting Links, and other lifting hardware components
- Load Measuring Devices*
- MAPs including Attachments
- PITs including Fork Extensions and Attachments
- Jacks
- Shop cranes (Portable Automotive Lifting Devices)

* Load Measuring Devices are verified by RECERT for structural integrity in the load path. Calibration of these devices shall be the owner's responsibility.

Institutional Material Handling Equipment (IMHE) not covered by the RECERT Program may be tested and inspected by RECERT if specifically requested in writing and funded by the owning organization.

2.1.2 Traceability to Original Equipment Manufacturer (OEM).

2.1.2.1 All LE hardware components shall be traceable to a credible source of information, such as OSHA or OEM for certifiability.

2.1.2.2 Fork extensions and attachments to PITs that affect capacity and/or stability shall be OEM equipment; or approved by the OEM in writing for its design and fabrication; or designed, documented, and approved by a registered professional engineer. In all cases, a tag or notice must be affixed to the equipment clearly showing the new CG and capacity restrictions.

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2.1.2.3 All LDE shall be used consistent with their intended purpose per OEM recommendations. The use of LDE that is contrary to OEM instructions or recommendations is not permitted.

2.2 LDE Certification and Safety Analyses

2.2.1 LDE Certification

a. LDE shall be certified, before first use, by the RECERT Manager based upon verification and acceptance of design safety factor, load testing, and nondestructive testing reports and by compliance with NASA-STD-8719.9 and this directive. It shall then be recertified periodically.

b. Altered LDE shall be recertified as a system unless specifically exempted by a safety variance reviewed and approved in accordance with Section 4 of this directive. Alteration is defined as extension, modification, addition, replacement, or deletion of components to the original. All components comprising a critical LE assembly shall be uniquely identified and controlled, and should not be interchanged for use elsewhere. Replacement by identical, individually certified and tagged components of equal or greater load rating is permissible without having to recertify the LE assembly.

c. The RECERT Manger may authorize the applicable contractor organization to perform LDE test and inspections at Government Owned, Contractor Operated facilities by the applicable contractor organization provided the contractor has a test and inspection plan satisfactorily addressing GSFC requirements, including personnel qualifications, and the contractor's plan has been reviewed and approved by the RECERT Manager.

d. Copies of all LDE test and inspection reports, including those for applicable off-site operations and applicable contractor installations, shall be forwarded to the RECERT manager for annual re-certification and record keeping.

2.2.2 LDE Safety Analyses

a. A recognized Safety Analysis, such as a Fault Tree Analysis, a Failure Modes and Effects Analysis, or an Operating and Support Hazard Analysis shall be performed by the owning organization on LDEs and jacks used for critical lifts. The analysis shall, as a minimum, determine potential sources of danger, identify failure modes, and recommend resolutions and a system of risk acceptance for those conditions that could cause loss of life, personal injury, and loss of or damage to the equipment, facility, or load.

b. Safety Analyses shall be reviewed and approved by the RECERT Manager.

2.3 Operational Requirements

2.3.1 Criticality Determination. The owning organizations shall specify the category of lifts to be performed by their LDE, i.e., critical or noncritical, so that the RECERT Manager may provide the requisite compliance requirements for the LDE.

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2.3.2 LD (except MPJ) Inspection Requirements. Inspection requirements are based on the usage categories of LDs. Inspections are "Daily," "Frequent" or "Periodic," and are defined in RECERT procedures.

2.3.2.1 Active LDs – These are devices that are available for unlimited daily use and:

- The Certified LDE Operator shall perform, prior to initial use, Daily Inspections and limit switch tests and record entry in the log book in accordance with RECERT procedures.
- RECERT Frequent Inspections shall be performed at monthly intervals.
- RECERT Periodic Inspections for recertification shall be performed once a year. For critical cranes, a Rated Load Test shall be included as part of the annual Periodic Inspection. For noncritical cranes, the Rated Load Test shall be included as part of the Periodic Inspection every fourth year.

2.3.2.2 Standby LDs – These devices are to be secured from use by RECERT tags and locks and operation shall be resumed only after an inspection by RECERT that allows unlimited use for a 1-month period as an Active LD. After that the LD shall be secured again. Additionally:

- RECERT Frequent Inspections shall be performed at 6-month intervals.
- RECERT Periodic Inspections shall be performed once a year. For critical cranes, a Rated Load Test shall be included as part of the annual Periodic Inspection. For noncritical cranes, the Rated Load Test shall be included as part of the Periodic Inspection every fourth year.
- At remote facilities, the LD owner shall secure the equipment using OSHA standard LOTO procedures

2.3.2.3 Idle LDs: – These devices are to be secured from use by RECERT tags and locks and there is no planned use of the LD for the next 12 months. If idle more than 6 months, the LD must be recertified prior to use. Additionally:

- RECERT tests and inspections are not required during an idle period.
- RECERT shall perform required tests and inspections prior to returning the LD to service.
- At remote facilities, the LD owner shall secure the equipment using OSHA standard LOTO procedures

2.3.3 Re-rating

Owner organizations may request that RECERT re-rate their LDs. Re-rating of LDs and the subsequent recertification shall be accomplished as follows:

a. Engineering analyses shall be performed in accordance with OSHA requirements and those of the Crane Manufacturers Association of America to validate that the LD can be used at the new re-rated load. Building structural support system(s) shall also be validated in terms of the new re-rated load. Re-rating resulting in higher equipment capacity shall require RECERT Manager approval prior to modification.

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b. Certify the LD and clearly display re-rated capacity with a tag or marking.

2.3.4 Transfer of LDE

a. LDE and associated certification documentation transferred to GSFC shall be reviewed for certification by RECERT.

b. Certification documentation shall accompany LDE permanently transferred from GSFC to other locations.

2.3.5 LDE (Re)Certification Tagging

Tags shall indicate the (re)certification and NDT status of all LDE. The tagging shall be done in accordance with a Work Instruction(s) describing the tags for each application. Unless indicated otherwise, all LDE tags shall be for a duration of one year and shall expire on the last day of the month one year from the month in which the tag was issued.

a. One load test tag (re)certification is applied to a lift assembly where the individual items are color-coded, tethered, or otherwise controlled as an assembly, and there are no plans to disassemble the assembly or to rearrange the configuration. The lift assembly is load tested as a unit with each item being individually NDT inspected and tagged as such.

b. Load test (re)certification tags are applied to each component for a lift assembly that will be disassembled and where the individual items are not color-coded, tethered, or otherwise controlled as an assembly. The lift assembly may be load tested as a unit or each component load tested individually with each item being individually NDT inspected and tagged as such.

c. One load test (re)certification tag per configuration is applied to a lift assembly where the configuration will be rearranged. The lift assembly is load tested in all applicable configurations with each item being individually NDT inspected and tagged as such. Note that there may be variations in the number of tags depending upon the similarities among the different configurations.

d. For loose, individual components, each component is load test (re)certification tagged and NDT inspected and tagged.

2.4 LDE Testing

2.4.1 Load Testing

New or extensively modified LDs and MPJ shall be proof load tested in accordance with Table 1. For periodic recertification, LDs shall be tested to 100% of their rated load. New or extensively modified LE shall be tested in accordance with Table 2 and inspected in accordance with Section 2.4.2.

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Certified test weights or calibrated load cells and test equipment shall be used for all LDE load-testing activities.

2.4.2 Nondestructive Testing

a. All LDE designated for Noncritical Lifts shall be subjected to visual NDT inspection after the initial proof load test, and after each periodic load test.

b. All LDE designated for Critical Lifts shall be subjected to NDT inspection in accordance with Table 2.

3. Personnel Qualification and Certification Requirements

3.1 Personnel Performing NDT

Personnel performing LDE NDT, including visual inspections, shall be qualified and certified by their employer in accordance with written practices meeting the requirements contained in American Society for Nondestructive Testing (ASNT) *Recommended Practice No. SNT-TC-1A*, Personnel Qualification and Certification in Nondestructive Testing. (Note: This does not apply to daily tests and inspections of LDE performed by Certified LDE Operators.)

3.2 Crane Operators

3.2.1 Crane Operator Certification Requirements

All Crane Operator candidates shall obtain formal training in LD operations and rigging as specified in NASA-STD-8719.9. Formal training may be available through the GSFC RECERT Program and other recognized sources and includes classroom instructions, written examination, and hands-on proficiency demonstration. The RECERT Manager shall evaluate and determine the acceptability of the syllabus of all training courses for which Operator candidates claim credit. In addition, all Crane Operator candidates shall pass the RECERT written examination and the applicable physical examination. The following training course topics shall be included as a minimum:

a. NASA-specific requirements
b. GSFC-specific requirements
c. Safe rigging procedures
d. Safe crane operations
e. Safety and emergency procedures
f. General performance standards
g. Pre-operational checks
h. Safety-related defects and symptoms
i. Specific hazards
j. Special procedures associated with critical lifts (critical lift operator training only)
k. Use of standard hand signals
l. Lessons learned

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Upon successful completion of the required training, the certification records are updated and an individual license, or in some instances a roster of Certified Crane Operators, is prepared. The licenses or the Operator roster shall be signed by the RECERT Manager and issued to the Operator, or, in the case of the Operator roster, to appropriate supervisory personnel.

3.2.2 Categories of Crane Operator Licenses.

There are three categories of Crane Operator Permits and Licenses:

a. Apprentice Permit: Apprentice permits are typically issued with a required 40 hours of noncritical lift operation and rigging to be attained under the direction of a licensed Crane Operator. Both the licensed operator and the candidate's supervisor shall attest to the attainment of these hours. One a case-by-case basis, for candidates with prior crane operation experience seeking GSFC Operator certification, the 40 hour apprenticeship requirement may be adjusted at the discretion of the RECERT Manager based on the recommendation of the trainer. The candidate must complete the required hours of operation within 12 months from Apprentice Permit issuance to prevent expiration of the Apprentice Permit. Upon completion of the required hours and attendance at a Noncritical Lift Crane Operator refresher class, the apprentice will be certified as a Noncritical Lift Crane Operator.

b. Noncritical Lift Crane Operator License: This license authorizes the Operator to use only the types of Cranes and Hoists listed thereon, and rig for noncritical lifts only, excluding Hydra-sets.

c. Critical Lift Crane Operator License: This license authorizes the operator to use Cranes and Hoists and rig for both noncritical and critical lifts, including Hydra-sets. The prerequisite for obtaining a Critical Lift Crane Operator License is that the candidate possesses a Noncritical Lift Crane Operator License and completes 40 hours of critical lift operation and rigging under the direction of a licensed Critical Lift Crane Operator. Upon completion of the required 40 hours and attendance at a Critical Lift Crane Operator class, the Operator will be certified as a Critical Lift Crane Operator. Exceptions to the prerequisite may be reviewed and granted by the RECERT Manager on a case-by-case basis.

The operation of remote radio-controlled LD requires specific training and authorization. Specific radio-controlled LD operator training is provided only to licensed Crane Operators. Rosters listing trained and authorized radio-controlled Crane Operators are posted at the applicable LD. Annual radio control refresher training is required.

3.2.3 Crane Operator Recertification

All Certified Crane Operators shall be recertified and a new license issued on an annual basis by providing evidence of completion of refresher training, including written examination and hands-on training, and evidence of satisfactory physical examination to be given every three years. A new license will be issued to the Operator, or, in the case of the Operator roster update, to appropriate supervisory personnel.

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3.3 Requirements for MAP and PIT Operator Certification and Jack Operator Authorization

3.3.1 MAP and PIT Operator Certification Requirements.

All MAP and PIT Operator candidates shall obtain formal training as specified in NASA-STD-8719.9. The RECERT Manager shall evaluate and determine the acceptability of the syllabus of all training courses for which Operator candidates claim credit. In addition, all MAP and PIT Operator candidates shall pass a written exam, hands on proficiency demonstration, and the applicable physical examinations. If deemed necessary by the RECERT Manager, a written RECERT exam may be given to verify the adequacy of the commercial training that the operator candidate claims credit.

Upon successful completion of the required training, the certification records are updated and an individual license, or in some instances a roster of Certified MAP or PIT Operators is prepared. The licenses or the Operator roster shall be signed by the RECERT Manager and issued to the Operator, or, in the case of the Operator roster, to appropriate supervisory personnel.

3.3.2 Jack Operator Authorization.

Operators of jacks shall be instructed in their proper use per paragraph 13.6 of NASA-STD-8719.9 and shall be designated and authorized to operate by their supervisor. The supervisor shall be responsible for retaining documentation of this training.

3.3.3 MAP and PIT Operator Recertification

All Certified MAP and PIT Operators shall be recertified every 3 years by providing evidence of completion of refresher training, including written examination and hands-on training, and evidence of continuing satisfactory physical examination. A new license will be issued to the Operator, or, in the case of the Operator roster update, to appropriate supervisory personnel.

3.4 Critical Lift Coordinators

3.4.1 CLC Certification Requirements

All CLC candidates shall attend a classroom training session equivalent to the training for critical lift crane operators (reference Section 3.2.1). All CLC candidates shall pass a written examination equivalent to that for critical lift operator certification but are excluded from hands-on proficiency demonstration and the physical examination requirement. Upon successful completion of CLC training and written examination requirements, the RECERT Manager shall certify CLCs by issuance of a signed license or a signed roster.

3.4.2 CLC Recertification

Recertification shall be granted upon successful completion of refresher training and applicable examinations on an annual basis.

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3.5 Reciprocity with Licensing Authorities.

At the RECERT Manager's discretion, a temporary Crane, MAP, or PIT Operator License may be issued to personnel on temporary assignment to GSFC provided that the candidate:

a. Possesses a valid Crane, MAP, or PIT operator license or equivalent issued by another Licensing Authority in compliance with requirements contained in NASA-STD-8719.9; and

b. The candidate's license or equivalent remains valid for the duration of the candidate's assignment at GSFC.

Temporary Crane, MAP, or PIT Operator Licenses will be valid for the duration of the candidate's assignment at GSFC, but shall not exceed 90 days. Thereafter, a GSFC Crane, MAP, or PIT Operator License will be required.

3.6 License Revocation

The RECERT Manager may revoke Crane Operator Licenses, CLC Licenses, MAP Operator Licenses, or PIT Operator Licenses for any of the following reasons:

a. Recommendations by an appointed panel of inquiry or Mishap Investigation Board.
b. Violations of, or noncompliance with, any of the safety requirements in the documented procedures.
c. Failure to meet RECERT-required refresher training or physical examination requirements.

Revoked Operator Licenses shall be returned to the RECERT Manager within 3 business days, and may be reinstated upon satisfactory completion of applicable refresher training or other remedial action deemed appropriate by the RECERT Manager.

4. Waivers

a. Waivers to the requirements of this directive shall be prepared and approved as outlined in NPR 8715.3 and GPR 1400.1 prior to operation.

b. If a mandatory requirement of this directive cannot be met, a detailed waiver request package shall be prepared by the requesting organization in accordance with NPR 8715.3 and GPR 1400.1. The waiver request package shall be reviewed and the risk accepted by the initiating Division Office and forwarded to the RECERT Manager for review and concurrence/nonconcurrence.

c. The RECERT Manager will submit the waiver request package to other authorities as stipulated in GPR 1400.1. Waiver requests approved by the Center shall be forwarded to NASA HQ/QS within 14 days.

5. LDE Committee

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5.1 A Center LDE Committee (LDEC) shall be established by the RECERT Manager via the GSC to ensure that LDE governing standards are understood and applied across all organizational elements at GSFC. In addition, the LDEC shall resolve LDE-related issues and provide a forum to exchange information. The RECERT Manager shall serve as the Chairperson of the Committee. The Deputy RECERT Manager/WFF shall serve as the Vice Chairperson of the Committee.

5.2 The LDEC Chairperson shall:
a. Accept appointees from the Directorates as Committee Members.
b. Include representatives from organizations conducting or having an interest in lifting operations.
c. Establish the Committee meeting schedule.
d. Conduct quarterly meetings, or more frequently as required.
e. Appoint an Executive Secretary for the Committee.
f. Report as required to the GSC regarding the activities of the Committee.

5.3 The Vice Chairperson shall:
a. Chair the Committee meeting in the absence of the Chairperson.
b. Report as required to the WFF Executive Safety Council regarding the activities of the Committee.

5.4 The Executive Secretary shall:
a. Assist the Chairperson in preparing and distributing meeting agenda, minutes, and related materials.
b. Assist the Chairperson in coordinating Committee-related activities.
c. Track action items and their status.
d. Maintain meeting minutes and make available for review by management and safety and health offices.

5.5 The Committee Members shall:
a. Represent his/her Directorate in the Committee's scheduled meetings. Invite other interested personnel to the meeting, including supporting contractors, as appropriate.
b. Bring Directorate issues/concerns relating to LDE and LDE operations to the Committee.
c. Serve as the information conduit between the LDEC and his/her Directorate organizations.
d. Provide input/closure of the action items assigned by the Chairperson.
e. Review and provide input to the Chairperson on LDE variance requests as required.

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TABLE 1
Load Test Requirements for New, Repaired, or Modified LDs

	Proof Load		Rated Load		Requirement
	Periodicity[1]	Percentage	Periodicity	Percentage	
Cranes					
Overhead (Non-Critical)	New, Altered	125% (+0%/-5%)	Every Four Years	100% (+5%/-0%)	NASA-STD-8719.9-4.3
Overhead (Critical)	New, Altered	125% (+0%/-5%)	Every Year	100% (+5%/-0%)	NASA-STD-8719.9-4.3
Mobile (Non-Critical)	New, Altered	110% (+0%/-5%)	Every Four Years	100% (+5%/-0%)	NASA-STD-8719.9-5.3
Mobile (Critical)	New, Altered	110% (+0%/-5%)	Every Year	100% (+5%/-0%)	NASA-STD-8719.9-5.3
MAPs (Non-Critical)	New, Altered	N/A[2]	Every Year	100% (+5%/-0%)	NASA-STD-8719.9-11.3
MAPs (Critical)	New, Altered	N/A[2]	Every Year	100% (+5%/-0%)	NASA-STD-8719.9-11.3
PITs (Non-Critical)	New, Altered	N/A[2]	Every Four Years	100% (+5%/-0%)	NASA-STD-8719.9-12.3
PITs (Critical)	New, Altered	N/A[2]	Every Year	100% (+5%/-0%)	NASA-STD-8719.9-12.3
Jacks (Flight Hardware)	New, Altered	120% (+0%/-5%)	Every Year	100% (+5%/-0%)	NASA-STD-8719.9-13.3

[1] "New, Altered" in the column entitled "Periodicity" means new, reinstalled, altered, repaired, rerated, reconditioned, and/or modified
[2] Load test shall be done in accordance with manufacturer's instructions and applicable ASME standard. In a case where both sources are silent, 100% of the rated capacity shall be used.

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TABLE 2
NDT and Load Testing Requirements for
Critical LE Certification and Recertification

EQUIPMENT	PROOF LOAD TEST FACTOR	PERIODIC LOAD TEST FACTOR	POST-PROOF NDT[4]	POST-PERIODIC NDT[4]
Alloy Steel Chain Slings	2.0	1.0	Visual	Visual
Wire Rope Slings	2.0	1.0	Visual	Visual
Metal Mesh Slings	2.0	1.0	Visual	Visual
Synthetic Rope Slings	2.0	1.0[2]	Visual	Visual
Synthetic Web Slings	2.0	1.0	Visual	Visual
Linear Fiber Slings	2.0	1.0	Visual	Visual
Structural Slings	2.0[1]	1.0	Critical Welds: **Surface** Noncritical Welds: **Visual**	Critical Welds: **Surface** Noncritical Welds: **Visual**
Shackles, D-rings, Turnbuckles, Lifting Lugs, Safety Hoist Rings, etc.[3, 5, 6, 7]	2.0[3]	1.0	Single and Non-Single Failure Load Path: **Surface**	Single and Non-Single Failure Load Path: **Surface**

1. Unless otherwise specified by design, due to material characteristics, geometry, safety factors, etc., but in any case, at least 125 percent of the sling's rated capacity.
2. Critical lift rope slings of synthetic material shall not be used beyond 50% of the manufacturer's rating to maintain an equivalent safety factor in the load system.
3. Lifting lugs, including eyebolts, which are permanently affixed to the load are considered to be part of the load and are exempt from load testing and NDT, but must be qualified by calculation by the owning organization.
4. "POST-PROOF" = After the initial, first-time proof load test of new or extensively modified items. "POST-PERIODIC" = After the annual rated load test of the item.
5. Certain restrictions on the use of turnbuckles may apply. Contact the RECERT Manager for guidance.
6. With the exception of thimbles and tapered end fittings, metallic fittings that are integral to slings are included. Thimbles and tapered end fitting are subject to visual NDT only.
7. This category of lifting hardware/components includes custom designed and fabricated items that are within the load path. No protective coatings should be applied to these items prior to NDT.

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CHANGE HISTORY LOG

Revision	Effective Date	Description of Changes
Baseline	11/23/04	Initial Release
Baseline	10/27/05	Administratively changed to reflect responsible office change from Code 540, Mechanical Systems Division, to Code 250, Safety and Environmental Division.
A	05/08/09	Responsible office was changed from Code 250, Safety and Environmental Division, to Code 540, Mechanical Systems Division. Revised nomenclature to be consistent with latest HQ requirements in Paragraph 4. Added Paragraph 5, LDE Committee. General editorial changes for consistency with GPR 8834.1.